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REMARKS / DISCUSSION OF ISSUES

Claims 1, 4-8, 10-11, 13-14, 17, and 21-28 are pending in the application.

The Office action objects to the specification for lacking headings. However, the applicants respectfully decline to add the headings. Section headings are not statutorily required for filing a non-provisional patent application under 35 USC 111(a), but per 37 CFR 1.51(d) are only guidelines that are suggested for applicant's use. (See Miscellaneous Changes in Patent Practice, Response to comments 17 and 18 (Official Gazette, August 13, 1996) [Docket No: 950620162-6014-02] RIN 0651-AA75 ("Section 1.77 is permissive rather than mandatory. ... [T]he Office will not require any application to comply with the format set forth in 1.77").

The Office action objects to the drawings for failing to illustrate the claimed photoresist material of claim 21 that forms the relief pattern. The applicants respectfully traverse this rejection. Although the invention is not limited to the use of photoresist material to form the relief pattern, the applicants' specification states that: "Most conveniently, the relief pattern is provided by means of conventional photolithography involving the patterning of a photoresist" at page 10, lines 33-35. In the context of claim 21, the relief patterns 51 and 71 of FIGs. 4, 5, and 6 correspond to the claimed photoresist material.

The Office action asserts that claims 23-28 are directed to a non-elected invention, and references 37 CFR 1.142(b) and MPEP 821.03 to support a requirement for an election. The applicants respectfully traverse this assertion with regard to claims 23-25, and maintain that the withdrawal of claims 23-25 from consideration is unfounded.

MPEP 821.03 states:

"821.03 Claims for Different Invention Added After an Office Action
Claims added by amendment following action by the examiner, MPEP 818.01, 818.02(a), to an invention other than previously claimed, should be treated as indicated by 37 CFR 1.145.
37 CFR 1.145 Subsequent presentation of claims for different invention.

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If, after an office action on an application, the applicant presents claims directed to an invention distinct from and independent of the invention previously claimed, the applicant will be required to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review as provided in 1.143 and 1.144."

The Examiner's attention is requested to the conjunctive "and" in 37 CFR 1.145: "an invention distinct from *and* independent of the invention previously claimed", as opposed to the Examiner's use of the disjunctive "or" in the Office action: "an invention that is independent *or* distinct from the invention as originally claimed". Claims 23-25 are explicitly dependent upon claim 10, and thus cannot be said to be independent of the invention previously claimed.

Because claims 23-25 are dependent upon a previously claimed invention, and are not "distinct from and independent of the invention previously claimed" as required in 37 CFR 1.145 to support an election/restriction, the applicants respectfully maintain that claims 23-25 may not be withdrawn from consideration by the Examiner.

The applicants also note that the Examiner's assertion regarding claims 23-28 being drawn to FIG. 6, and not FIG. 4, is erroneous. The use of a selection layer to facilitate the depositing of metal or metal alloy upon the surface, as claimed in claims 23-28, is not limited to FIG. 6, and may be used to form any of the illustrated embodiments.

The Office action rejects claim 8 under 35 U.S.C. 112, second paragraph. Claim 8 is correspondingly amended herein.

The Office action rejects claims 10 and 11 under 35 U.S.C. 102(e) over Duthaler et al. (USP 6,596,438, hereinafter Duthaler). The applicants respectfully traverse this rejection.

Claim 10, upon which claim 11 depends, claims a method of manufacturing an electroluminescent device that includes forming one or more layers of organic electroluminescent material on a surface, and subsequently ink-jet printing molten

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metal to form electrodes atop the one or more layers of organic electroluminescent material.

Duthaler teaches: ink-jet printing microcapsules 506 of electrophoretic particles 508 on a first substrate 502 (step 1 in FIG. 12), ink-jet printing molten metal to form electrodes on a second substrate 526 (step 2 in FIG. 12), then joining the first substrate 502 to the second substrate 526 (step 3 in FIG. 12).

Because Duthaler does not teach forming one or more layers of organic electroluminescent material on a surface, and subsequently ink-jet printing molten metal to form electrodes atop the one or more layers of organic electroluminescent material, as specifically claimed by the applicants, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 10 and 11 under 35 U.S.C. 102(e) over Duthaler.

The Office action rejects claims 1, 4-8, 14, and 17 under 35 U.S.C. 103(a) over Strum et al. (USP 6,087,196, hereinafter Strum) and Asakawa (USP 6,686,211). The applicants respectfully traverse this rejection.

Each of independent claim 1, upon which claims 4-5, 7-8, and 14 depend, and independent claim 6, upon which claim 17 depends, claims an electroluminescent device that includes a pattern-wise ink-jet printed electrode atop an organic electroluminescent layer on a substrate, the electrode comprising a metal or a metal alloy having a melting point of 250°C or less that is ink-jet printed in a molten form and being at least 5 µm thick.

Neither Strum nor Asakawa teach or suggest an ink-jet printed electrode atop an organic electroluminescent layer on a substrate, the electrode comprising a metal or a metal alloy having a melting point of 250°C or less that is ink-jet printed in a molten form and being at least 5 µm thick.

The Office action acknowledges that Strum does not teach an electrode comprising a metal or metal alloy that has a melting point of 250°C or less, and relies upon Asakawa for this teaching.

Asakawa does not teach ink-jet printing the metal or metal alloy in molten form. The Office action asserts that the ink-jet printing of metal in a molten form

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cannot be distinguished over other techniques for creating electrodes, and thus this claimed limitation cannot distinguish this invention over Asakawa's printing of fine particles of metal suspended in a solvent. The applicants respectfully disagree with this assertion. As taught by the applicants, the ink-jet printing of metal in a molten form creates an electrode having a characteristic profile that exhibits "a shape a fluid resting on a surface would adopt" (page 4, first paragraph; also illustrated in FIGs. 1 and 4). The ink-jet printing of a metal suspended in a solvent does not provide this characteristic shape when the solvent is evaporated, and thus a device produced by ink-jet printing metal in molten form is structurally distinguishable from a device produced by ink-jet printing particles of metal in a solvent.

Additionally, the ink-jet printing of metal in a molten form facilitates the creation of a thick electrode (at least 5 μm thick, as claimed), the advantages of which are presented on page 4 of the applicants' specification.

Because neither Strum nor Asakawa, individually or collectively, teach or suggest ink-jet printing molten metal atop an organic electroluminescent layer, and because neither Strum nor Asakawa, individually or collectively, teach or suggest ink-jet printing electrodes of at least 5 μm thickness, as specifically claimed by the applicants, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 1, 4-8, 14, and 17 under 35 U.S.C. 103(a) over Strum and Asakawa.

The Office action rejects claims 13 and 22 under 35 U.S.C. 103(a) over Duthaler and Asakawa. The applicants respectfully traverse this rejection, based on the comments above regarding claim 10, upon which these claims depend, and based on the following remarks.

Claim 13 claims ink-jet printing a molten metal or metal alloy having a melting point of 250°C or less, and claim 22 claims ink-jet printing a molten metal or metal alloy having a melting point between 60°C and 150°C.

As noted above, Asakawa teaches the ink-jet printing of metallic particles in a solvent. As such, Asakawa is silent with regard to the metal point of the metals used. The Office action asserts that Asakawa's teaching of the use of In-Ga alloy, Ga, and

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indium-tin solder as the metallic particles in a suspension inherently teaches the use of metals or metal alloys having melting points of 250°C or less, and specifically between 60°C and 150°C, in the molten metal printing process of Duthaler. The applicants respectfully disagree with this assertion.

Conventionally, because organic electroluminescent material is sensitive to heat, ink-jet printing of molten metal atop an organic electroluminescent layer is not done. Duthaler merely refers to printing molten metal, and does not teach a need to use low-temperature molten metal, because Duthaler prints the molten metal on a different substrate from the display material. Asakawa provides a list of metals that may be suspended in a solvent, but provides no guidance for the selection of particular metals from the list. Absent the applicants' teaching, one of ordinary skill in the art would not be lead by Asakawa's teaching to limit the temperature of the process of Duthaler by choosing metals with relatively low (below 250°C) melting points, and more specifically, would not be lead to limiting the range to between 60°C and 150°C.

Because neither Duthaler nor Asakawa, individually or collectively, teach or suggest ink-jet printing a molten metal or metal alloy having a melting point of 250°C or less, and more specifically between 60°C and 150°C, as claimed by the applicants, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 13 and 22 under 35 U.S.C. 103(a) over Duthaler and Asakawa.

The Office action rejects claim 21 under 35 U.S.C. 103(a) over Duthaler and the applicants' admitted prior art. The applicants respectfully traverse this rejection, based on the remarks above regarding claim 10, upon which claim 21 depends, and based on the following remarks.

The Office action asserts that the applicants' admitted prior art teaches forming a relief pattern on the surface to facilitate patterning the pattern-wise ink-jet printed electrode by patterning of a photoresist material, as claimed in claim 21. The applicants respectfully disagree with this assertion. In the applicants' specification, the applicants admit that patterning a photoresist material is a conventional prior-art process. However, the applicants' specification does not state that the use of such a

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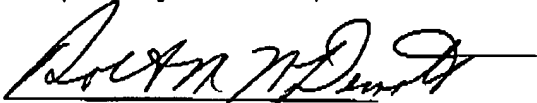
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process to create a relief pattern that facilitates ink-jet printing of an electrode of an electroluminescent display is prior art, as specifically claimed in claim 21.

Because neither Duthaler nor the applicants' admitted prior art, individually or collectively, teach or suggest forming a relief pattern on the surface to facilitate patterning the pattern-wise ink-jet printed electrode by patterning of a photoresist material, as claimed by the applicants, the applicants respectfully request the Examiner's reconsideration of the rejection of claim 21 under 35 U.S.C. 103(a) over Duthaler and the applicants' admitted prior art.

In view of the foregoing, the applicants respectfully request that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



Robert M. McDermott
Reg. 41,508
Att'y for Applicant(s)

1824 Federal Farm Road
Montross, VA 22520
Phone: (804) 493-0707
Fax: (215) 243-7525